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Marine Corps Base, Camp Lejeune
Proposed Remedial Action Plan
Operable Unit No. 11 (Sites 7 and 80)

January 1997

This Fact Sheet provides information regarding the Proposed Remedial Action Plan (PRAP) for Operable Unit (OU) No. 11 (Sites 7 and 80) at Marine Corps Base (MCB), Camp Lejeune, North Carolina. MCB, Camp Lejeune has been investigating sites at the base through the Department of Defense (DoD) Installation Restoration (IR) Program. The goal of the IR Program is to identify, assess, characterize, and clean up or control contamination from past hazardous waste disposal operations.

Overview

Marine Corps Base (MCB), Camp Lejeune is a training base for the U.S. Marine Corps located in Onslow County, North Carolina. The facility covers approximately 236 square miles and includes 14 miles of shoreline. Operable Unit (OU) No. 11 (Sites 7 and 80) is one of 18 OUs located within MCB, Camp Lejeune. This fact sheet presents the site location and history, investigation results, and the Proposed Remedial Action Plan (PRAP) for Sites 7 and 80.

SITE 7

Site 7 Location/History

Site 7 is referred to as the Tarawa Terrace Dump. The site is located approximately 1/4 mile south of the Tarawa Terrace Housing Complex. Site 7 is bordered by the Tarawa Terrace Community Center to the northeast, Northeast Creek to the south, the Tarawa Terrace Wastewater Treatment Plant to the southwest, and an unnamed road that leads to the wastewater treatment plant to the west. Most of Site 7, which includes a marsh/swamp area that borders Northeast Creek, is densely wooded. There are no drinking water supply wells in the area.

Site 7 is known to be a former dump that was used during the construction of the Tarawa Terrace housing complex. The precise years that the dump was in operation are unknown, but it was reportedly closed in 1972. Historical records do not indicate that hazardous materials were disposed at the site. However, construction debris, wastewater treatment plant filter media, and household trash are known to have been disposed.

Remedial Investigation

A Remedial Investigation (RI) was conducted at Site 7 during 1994 and 1995. The investigation included the collection of surface soil, subsurface soil, groundwater, surface water and sediment samples which were sent to a laboratory for chemical analysis. The analytical results helped to characterize environmental conditions at the site and to identify the presence or absence of contamination within the site boundaries.

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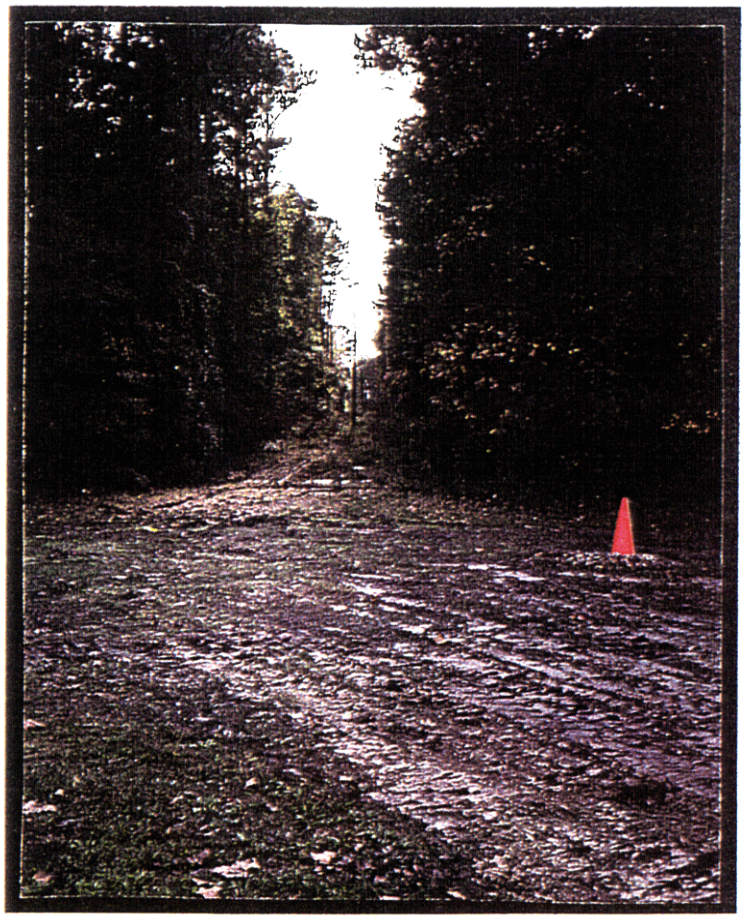
Photograph 1- Site 7
Photograph was taken along the cleared access road in the southwestern portion of Site 7.



Photograph 2- Site 7
Photograph of an electric service line right-of-way at Site 7

Soil Investigation

Volatile organic compounds (VOCs) were absent in the surface and subsurface soil. Polynuclear aromatic hydrocarbons (PAHs) were the most prevalent semivolatile organic compounds detected in soil. Limited pesticides and polychlorinated biphenyls (PCBs) also were detected. Pesticide concentrations were similar to those detected throughout the Base. PCBs were detected at trace levels at random locations. The occurrence of inorganics was widespread in both surface and subsurface soil. Although some inorganics occurred at levels which exceed background concentrations, these levels do not suggest a gross inorganic contamination problem in either the surface or subsurface soil.

Groundwater Investigation

Inorganics were the predominant constituents detected in the groundwater at Site 7. Initial sampling of the shallow groundwater aquifer detected the inorganics aluminum, chromium, iron, lead and manganese were detected at levels exceeding state and/or federal criteria in the shallow groundwater aquifer. At the request of state and federal regulators two additional rounds of groundwater samples were collected. Concentrations of inorganics including these metals were less than regulatory levels in subsequent rounds. Therefore it appears that inorganics are not a site-related problem at Site 7.

Surface Water/Sediment Investigation

Surface water and sediment were collected from on-site tributaries to Northeast Creek, from a drainage ditch that empties into one of these tributaries, and from Northeast Creek itself. Sediment samples were also collected from the marsh/swamp area adjacent to Northeast Creek. In surface water, levels of arsenic, iron, and manganese were detected that slightly exceed federal, but not state, criteria. No contaminant concentrations in sediment exceed their corresponding criteria.

Human Health Risk Assessment

As part of the Remedial Investigation, a Human Health Risk Assessment was conducted to determine the potential human health risks that may exist at Site 7. Potential risks were evaluated for current residential children and adults, future residential children and adults, and future construction workers. Calculations determined that there are no unacceptable carcinogenic or noncarcinogenic risks for current residents or future construction workers. Using the initial groundwater sampling data, unacceptable carcinogenic and noncarcinogenic risks to future residents would exist if residents ingested shallow groundwater. However, the estimated risks to future residents using groundwater data from the two additional sampling rounds indicate that there are no unacceptable carcinogenic and noncarcinogenic risks. In addition, future residential development at Site 7 is highly unlikely due to the unbuildable terrain features such as swamps and marsh areas and all potable water supply wells at MCB, Camp Lejeune are located within the deep groundwater aquifer due to the general unsuitable nature of water in the shallow aquifer for potable purposes, and the low productivity in the shallow aquifer. Based on this information, the unacceptable future risks are overly conservative and do not require additional action.

Ecological Risk Assessment

In addition to the Human Health Risk Assessment, an Ecological Risk Assessment was conducted to determine potential ecological risks to terrestrial and aquatic receptors that may exist at Site 7. Several surface water and surface soil constituents were detected at levels exceeding

ecological screening criteria for terrestrial receptors. In addition, slight risks were calculated for rabbits, raccoons, and short-tailed shrews. However, these results were generated under highly conservative assumptions and it was ultimately determined that the current site conditions do not present unacceptable risks for either aquatic or terrestrial receptors at Site 7.

PRAP

After reviewing the Remedial Investigation, Baseline Human Health Risk Assessment, and Ecological Risk Assessment, the current conditions at Site 7 appear to protect human health and the environment. No human health risks were identified and no areas of concern were identified at the site. Therefore, no further action at the site is deemed appropriate and is the proposed remedial action plan. This alternative involves no further investigation (sampling) at the site and leaving the site as it currently exists.

SITE 80

Site 80 Location/History

Site 80, referred to as the Paradise Point Golf Course Maintenance Area, is located within the Paradise Point Golf Course at the western end of Brewster Boulevard. The site encompasses a one-acre area that is relatively cleared and flat. Two buildings are located at Site 80: a machine shop and a general maintenance building. There is also a maintenance wash-down area consisting of a concrete wash pad and sump. Water and oil collected by the sump travels into an oil/water separation pit located southeast of the wash pad. The northeast portion of Site 80 contains several large soil mounds that contain fill material created during the installation of golf course ponds. There is an open area located south of the mounds where golf course maintenance debris, including tree limbs, lawn clippings, wooden timbers, and brush piles, has been deposited.

The Paradise Point Golf Course was constructed in the late 1940s and the machine shop was constructed in 1946. Reportedly, Site 80 has been used as a maintenance area since the initial construction of the golf course. Today, the maintenance area is still in operation. Current operations of the maintenance include the machine shop (a potential source of waste oils), the equipment wash-down area (a potential source of contaminated washwater), and the routine spraying of pesticides and herbicides for routine application.

Remedial Investigation

A Remedial Investigation was conducted at Site 80, during October 1994. The Investigation included the collection of surface soil, subsurface soil, and groundwater samples which were sent to a laboratory for chemical analysis. The analytical results helped to characterize environmental conditions at the site and to identify the presence or absence of contamination within the site boundaries. The predominant contaminants detected at Site 80 were pesticides.

Soil Investigation

In surface soil, the detected pesticides included dieldrin, 4,4'-DDE, 4,4'-DDD, 4,4'-DDT, alpha-chlordane, and gamma-chlordane. The highest pesticide concentrations were located in the west/northwest portion of the site. PAH (polynuclear aromatic hydrocarbon) constituents and inorganics including arsenic were also detected in the surface soil.

In subsurface soil, the detected pesticides included delta-BHC, aldrin, dieldrin, 4,4'-DDD, and 4,4'-DDT. The highest pesticide concentrations were located in the west/northwest portion of the site. In addition, one volatile organic compound (carbon disulfide) and four semivolatile organic compounds (three phthalate esters and phenanthrene) were detected. Several inorganics including arsenic were also detected.

Photograph 1- Site 80
Photograph of machine shop (on left) and maintenance building (on right).

Photograph 2- Site 80
Photograph of the west/northwest area where the time-critical removal action was conducted for pesticide and arsenic contaminated surface soil.

Groundwater Investigation

In shallow groundwater, the pesticides 4,4'-DDD and 4,4'-DDT were detected in a monitoring well located in the west/northwest portion of the site. In addition, one volatile organic compound (carbon disulfide) and four semivolatile organic compounds (acenaphthene, fluorene, carbazole, and pyrene) were detected at low levels. The inorganics iron, manganese, and thallium were detected above state and federal standards, but they were within the typical ranges for inorganics detected throughout the Base.

In the deep groundwater, no organics were detected. The inorganics barium, calcium, magnesium, manganese, potassium, and sodium were detected, but not above state or federal standards.

Human Health Risk Assessment

As part of the Remedial Investigation, a Human Health Risk Assessment was conducted to determine the potential human health risks that may exist at Site 80. Potential risks were evaluated for current civilian base personnel, future on-site residents, and future construction workers. It was determined that due to pesticides and arsenic in surface soil, there was an unacceptable carcinogenic risk for current civilian base personnel. To alleviate this risk, a time-critical removal action was conducted in March through June 1996 to remove the pesticide and arsenic contaminated soil and replace it with clean soil. OHM Remediation Services Corporation removed approximately 988 tons of contaminated soil. This soil was trucked offsite for treatment via chemical oxidation followed by stabilization. No unacceptable risks were identified for future construction workers. However, unacceptable carcinogenic and noncarcinogenic risks were identified for future on-

Photograph 3- Site 80

Photograph of the debris pile located in the northern portion of Site 80.

site residents. These risks were driven primarily due to the potential ingestion of arsenic in shallow groundwater. These risks are believed to be conservative because although arsenic was retained for consideration in the risk assessment, it was only detected once above regulatory standards. All current potable water supply wells at MCB, Camp Lejeune are located within the deep groundwater aquifer due to the unsuitable nature and low productivity of water in the shallow aquifer. Additionally, future residential development of MCB, Camp Lejeune and in particular Site 80 is unlikely due to the natural setting of the site, therefore, these future risks are overly conservative and do not require additional action.

Ecological Risk Assessment

In addition to the Human Health Risk Assessment, an Ecological Risk Assessment was conducted during the Remedial Investigation to determine potential ecological risks that may exist at Site 80. Since there are no surface water bodies at the site, only terrestrial receptors were considered in the ecological assessment. Several surface soil constituents were detected at levels exceeding ecological screening criteria and a slight risk for rabbits was identified. However, most of the site is gravel-covered which reduces the rabbit's potential habitat, so the risk for rabbits is overly conservative and it was ultimately it was determined that there are no unacceptable risks for terrestrial mammals or birds at Site 80.

PRAP

The Proposed Remedial Action Plan for Site 80 is Institutional Controls. Institutional controls includes site restrictions implemented via the Base Master Plan to prohibit potable use of the groundwater and well placement at the site. Institutional controls are proposed at Site 80 based on the results of the human health and ecological risk assessments. The institutional controls will prohibit the future use of groundwater from this site for potable purposes.

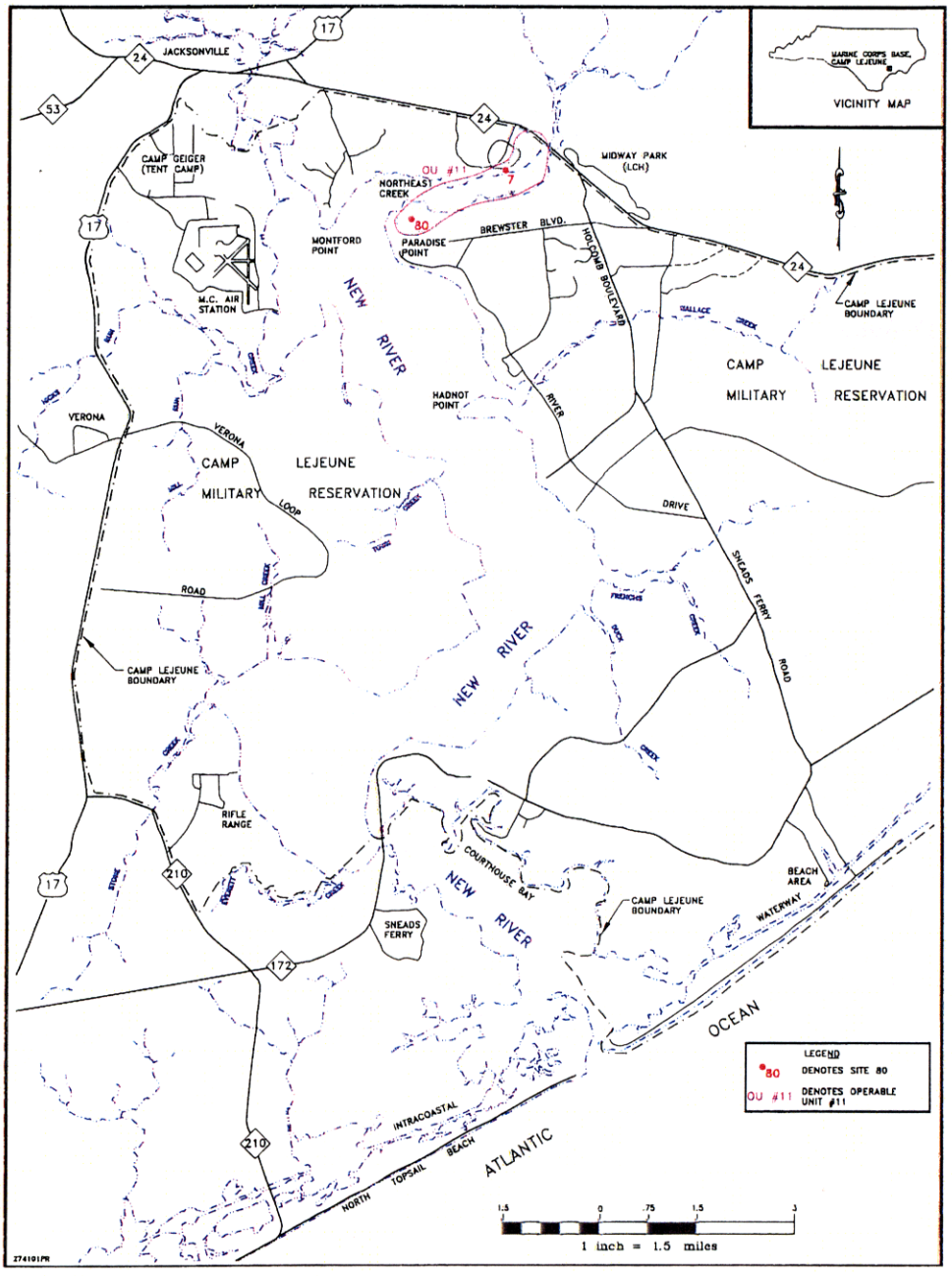
Public Participation

The public is encouraged to review and comment on the PRAP and other documents pertaining to Sites 7 and 80. This information is found in the Administrative Record file available for review at the following locations:

Onslow County Library
58 Doris Avenue East
Jacksonville, NC 28540
Mon.-Thurs. 9:00 a.m. to 9:00 p.m.
Fri.-Sat. 9:00 a.m. to 6:00 p.m.

MCB, Camp Lejeune
Environmental Management Division
Building 67, Room 239
Marine Corps Base
Camp Lejeune, NC 28542

MCB, Camp Lejeune will hold a public information meeting on February 5, 1997 at Tarawa Terrace I Elementary School on Tarawa Boulevard at 7:00 p.m. The 30-day public comment period for the PRAP will be held from February 5, 1997 to March 7, 1997 to allow for public participation in the selection of the final remedial action plan.



Sites 7 and 80 Location (upper middle)

Points of Contact

To provide written comments to the PRAP, please contact either:

Ms. Katherine Landman, Code 18232 (757) 322-4818
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Norfolk, Virginia 23511-2699

or

Mr. Neal Paul, Director, Installation Restoration Program, (910) 451-5068
AC/S EMD (IRD)
Building 67, Room 237
Marine Corps Base, PSC Box 20004
Camp Lejeune, NC 28542-0004